DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIATION DIVISION

Technical Guidance Document #19

Recovery of Light Non-Aqueous Phase Liquid (LNAPL)

- Montana is a non-degradation state and has specific water quality standards established by DEQ Circular-7 that must be achieved. Petroleum contaminant concentrations in groundwater must meet these standards. Typically, sites with mobile LNAPL (LNAPL that accumulates in a monitoring well), will not be able to achieve water quality standards and will require additional remediation.

- All sites with LNAPL must make every conceivable effort, utilizing every available technology, to recover mobile LNAPL. The Federal definition of free product recovery to the maximum extent practicable gives no consideration to cost or feasibility.

- Mobile LNAPL must be recovered to the technical limits of existing remediation equipment - in many cases this may be to 1/8 inch (.01 ft.), and in some cases, a sheen (e.g., belt skimmers).

- The responsible party must explore appropriate methods of mobile LNAPL recovery to verify what type of mobile LNAPL recovery is technically feasible. A technical infeasibility waiver is not appropriate and does not meet the definition. If not technically feasible today, more efficient LNAPL recovery may be feasible in the future. In these cases hand-bailing or passive skimming of monitoring wells as an interim recovery alternative may be very appropriate.

- A cost-effectiveness waiver is not appropriate and does not follow the federal definition of recovering all free product "to the maximum extent practicable." Remediation costs will increase if mobile LNAPL is not recovered. The continued leaching of LNAPL will generate a dissolved plume and smear hydrocarbons across the water table interface.

- Precludes serious consideration of monitored natural attenuation (MNA) for sites with mobile LNAPL due to the size of the source area mass. MNA should only be considered when the majority of the source mass has been removed. MNA may be appropriate for sites with limited <u>non-mobile</u> residual phase LNAPL where the source mass will attenuate within an acceptable time frame. Source mass and attenuation timeframes must be calculated based on known site parameters, such as total residual source mass, the dilution/attenuation factor, and complete definition of the extent and magnitude of the petroleum release.